

STEMLESS BOATS OF ENDE BAY

NICK BURNINGHAM

*Northern Territory Museum of Arts and Sciences,
GPO Box 4646, Darwin NT 0801, Australia.*

ABSTRACT

This paper presents lines and construction details of the various types of stemless water craft from Ende Bay, Flores in the lesser Sunda islands of Indonesia. The structures and characteristic styles of these vessels were formerly more widely distributed. Elements of the structures and of the styles can still be traced elsewhere in the archipelago in the constructions of planked vessels built with stems and in the styling of dugout canoes. The boats of Ende are an interesting remnant of an indigenous boat building tradition.

KEYWORDS: Perahu, maritime technology, Indonesia, Flores, sailing vessels.

INTRODUCTION

This paper presents data collected by the author during a week spent in Ende, Flores (8° 50'S, 121° 40'E) in February 1989.

The spelling of indigenous nautical terms, such as the names of boat types, is the spelling supplied, or agreed to, by the majority of local informants at Ende. For this reason the spelling *sope* differs from *soppe*, *sopé* and *sopek* collected in other areas and used in previous papers (Burningham 1989a,b). Modern Indonesian orthography is used for Indonesian words and place names (e.g. Makassar) but the old spelling Macassar is given in historical context and the term *Macassan* is used as defined by Macknight (1976:1-2).

Ende Bay is on the south coast of Flores, a coast which is largely steep to, and open to the Indian Ocean swell, and therefore lacks harbours and maritime activity. Ende Bay is an exception: in the wide bay there are a number of anchorages; fishing villages line the shore and small boat building is practised in the villages of Ende Bay and also Ipih Bay close to the east. Larger cargo carrying *perahus* are built and operated from the island, Pulau Ende, which is in the bay; the best of these are fine examples of motor-sailing *perahu* (*perahu layar motor* or P.L.M.) with the *lambo* hull form.

The Dutch ethnographer Nootboom was attracted to Ende in the 1930's and wrote a description of the boats of Ende (Nootboom 1936; Horridge and Snoek unpublished). Some of the boat types described by Nootboom still exist at Ende and they have been briefly described by Horridge (1986:56-57). They are planked boats which are notable for their stemless structure. Planked boats with this stemless structure were formerly more widely distributed in Indonesia (Van Kampen 1909:32-33) but are now found in only a few places. These are discussed below. A simple version of this structure is still often seen on built-up dugout canoes especially in the area formed by the Sulu Sea, Makassar Strait and South Sulawesi. In this type of structure, specially shaped pieces form each side of the bow and stern and they are fastened together at the ends without a stem or sternpost.

Physically the Endenese, along with the other ethnic groups of central and eastern Flores, are mixed and have a considerable proportion of papuan and melanesian features (Lebar 1972:86; Bellwood 1985:75). The coastal, maritime oriented people of Ende have noticeably more malay features though they speak the same local language (bahasa Ende). The maritime people are almost exclusively Moslem and the non-maritime people are predominantly Christian. The coastal

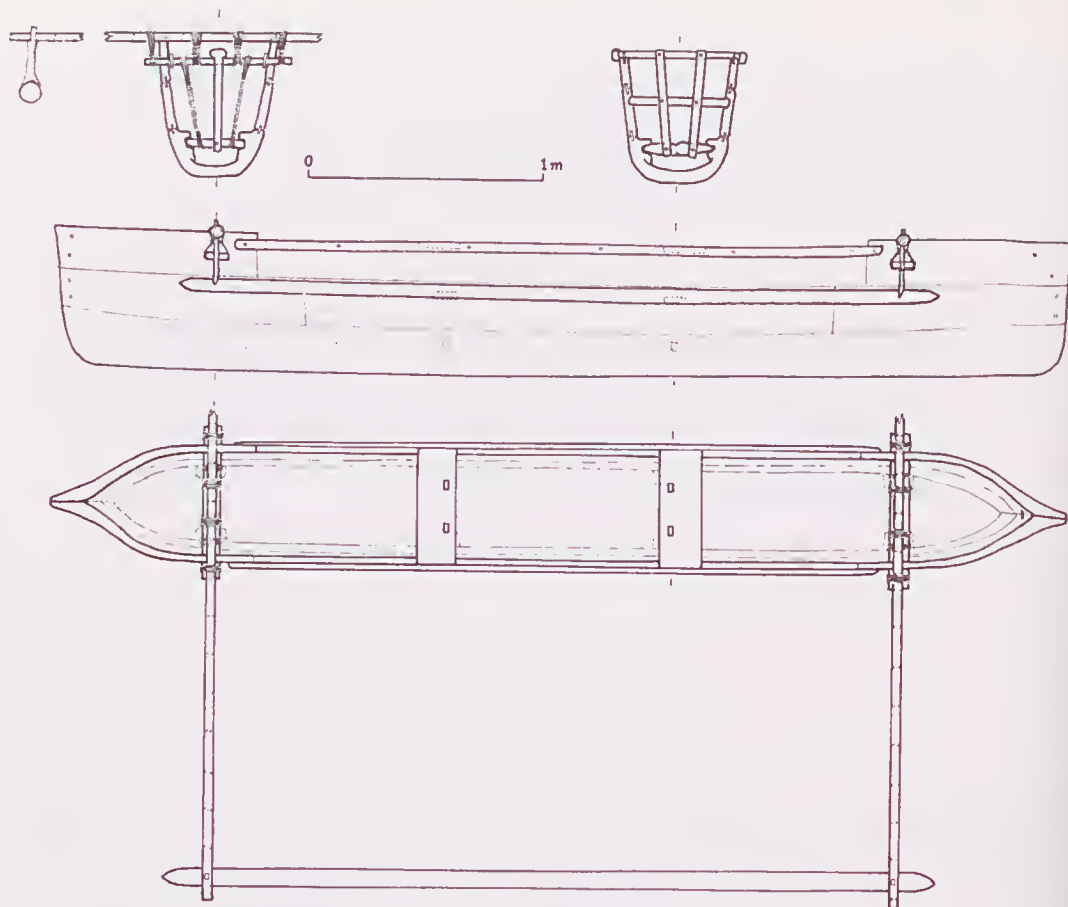


Fig. 1. A *Kova Navi* showing the two types of *kamukaro* and other structural detail.

Moslems regard the Christian communities as mountain people; but some of the mountain people do, in fact build, own and use boats called *kova navi*.

THE KOVA NAVI

These boats of the mountain people are usually built in villages some distance from the sea and then carried down to the sea when they are complete. They are double-outrigger canoes, the hulls are built-up dugouts of functional but rather unsophisticated design. Their dugout base, called *una*, is shallow and flat bottomed with a considerable thickness of timber which makes them rather heavy. The sides are raised by two fairly wide straiks which are edge-dowelled together and to the *una*. The long straight planks which build up the sides of the canoe are called *fi*: short curved pieces which form each side of the bow and stern are called *to'bo*. The *to'bo* meet at

the ends of the hull where they are fastened together with treenails.

There are no frames fitted in the hull of a *kova navi* but there are beams let into the dugout and into the planks and these beams are connected to each other by struts and lashings (Fig. 1). These structures which hold the hull together are called *kamukaro*. There are four of them: one in the bow and one in the stern are used to secure the outrigger booms (*samang*). The connection of the outrigger booms to the hull is an interesting combination of the two main systems found in Indonesia (Hornell 1920). There is a narrow thwart a short distance below the boom which projects through the hull so that the boom can be lashed to the thwart both inside and outside the hull: this system is common on canoes from the region of Ujung Pandang (formerly called Macassar) in South Sulawesi, (Hornell 1920:88). In the case of the Ende *kova navi* the thwart is secured to a beam or brace below it which is held

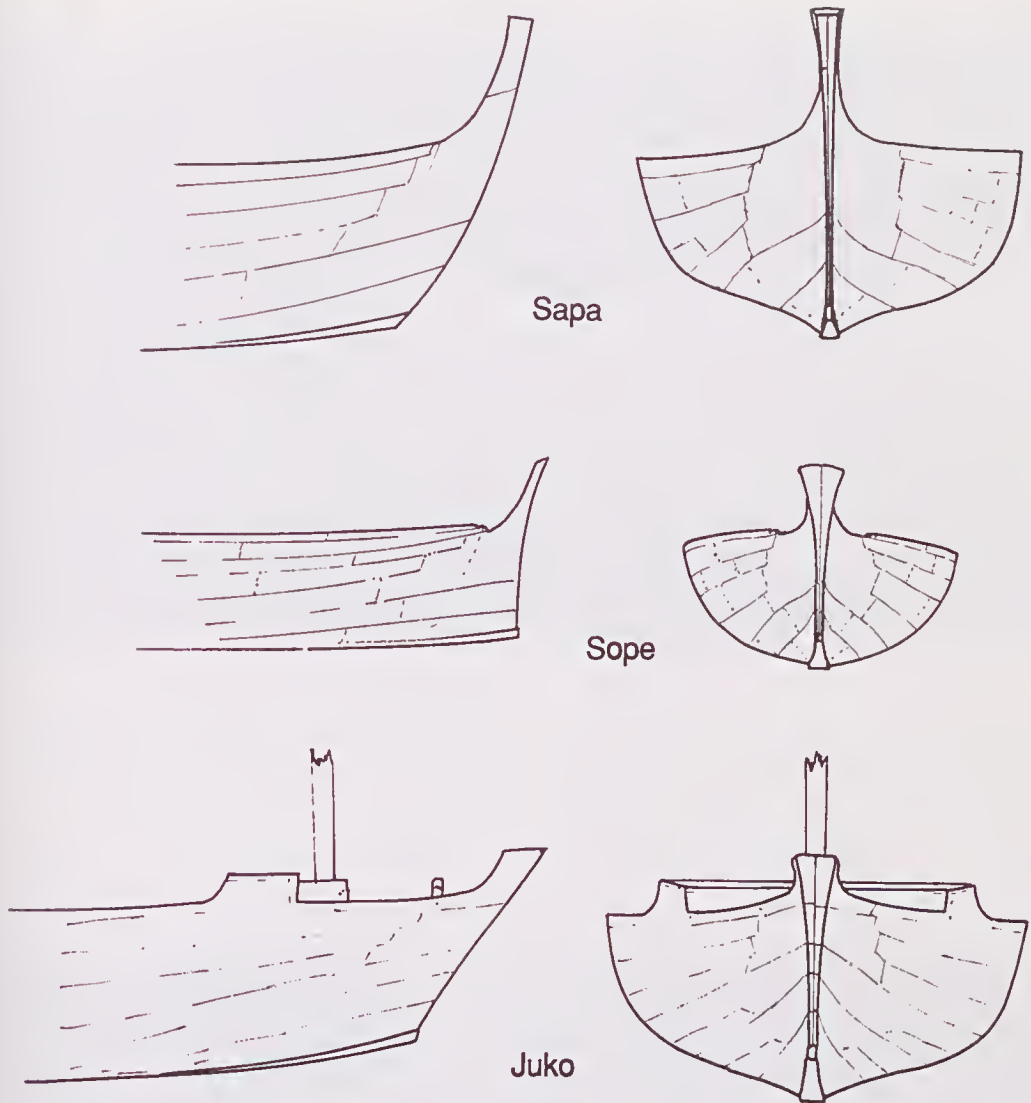


Fig. 2. Profiles and bow-on views of three styles of stemless boat from Ende Bay.

by cleats low in the hull: in most Indonesian outrigger canoes the outrigger boom is secured directly to this beam (Hornell 1920:figs 36,41,52; Hornell 1936:11).

The outrigger connectives which are slightly forked at the bottom and straddle the outrigger are of a type not classified by Hornell (1920) or Haddon and Hornell (1938). Nootboom (1936) noted that the aft connectives were let through the outrigger and this design was observed on one *kova navi* in 1989, however, the owner stated that it was a temporary and incorrect arrangement.

Kova navi are simple functional craft, the bow and stern are identical and there is no

styling or ornamentation. They are used mainly for tending basket fish traps (*vuvu*) and they are usually propelled by paddles. Occasionally a small sail is set from a temporary mast which is lashed to the forward *kamukaro*.

SMALL CRAFT OF THE MARITIME PEOPLE

The coastal communities around the town of Ende believe themselves to be descendants of mercenaries who came to fight for neighbouring clans against the *raja* of Ende. They do not use *kova navi* or any other outrigger canoes but they employ a variety of small craft

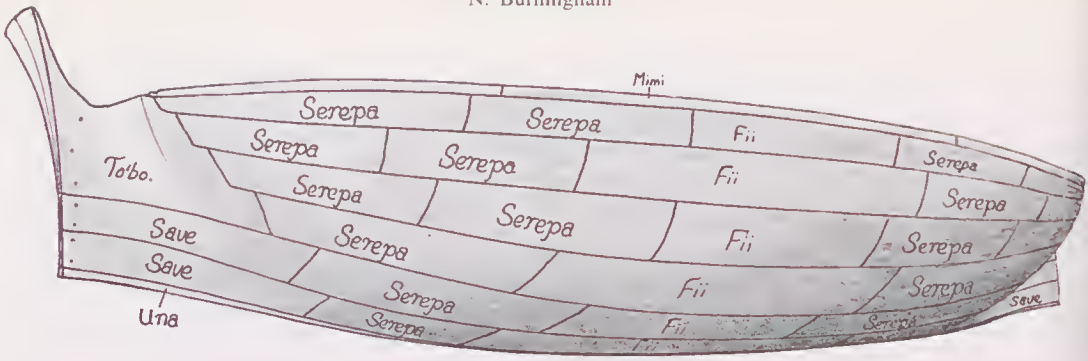


Fig. 3. Plank pattern of a *sapa savé dua* with the names of planks, bow pieces and keel.

which are generically known as *sapa*. The name *sapa* is applied to vessels less than about five or six metres length.

There are a few simple dugouts in use, they are called *sapa monda*: *mondu* means rounded. A *sapa monda* is considered to be a canoe carved from a single tree trunk with no planks added but some do have a small plank let in to repair or raise a low part of the rail. If there is a complete run of planks forming a straik, so that the canoe is a built-up dugout, then it can be called a *kova* or sometimes a *sapa sangge*: *sangge* is actually the name of a type of sea shell and also a spiral or scroll motif which resembles the shell. The *sangge* motif is sometimes used to decorate the bow and stern of some types of *sapa* and it seems that the name *sapa sangge* is now used by some people for

certain types of *sapa* with a rounded, cutaway forefoot whether or not they are decorated with a *sangge*.

Neither *sapa monda* nor built-up *kova* type canoes are common in the area of Ende. Small planked boats are much more popular. These planked *sapa* range in size from about 3.5 m in length up to an undefined size too large to be called *sapa*. There are three distinct styles of planked *sapa*, these styles are usually called *sope*, *juko* and *sangge*, but for the reason given above the name *sangge* is not really appropriate and the third type is also simply called *sapa* (Fig. 2). They are all constructed in the same way.

Nearly all planked *sapa* are built up from a small, shallow, rockered keel but a few have a wider, dugout keel piece. It is said that the



Fig. 4. Internal view of the bow of a *sapa*.

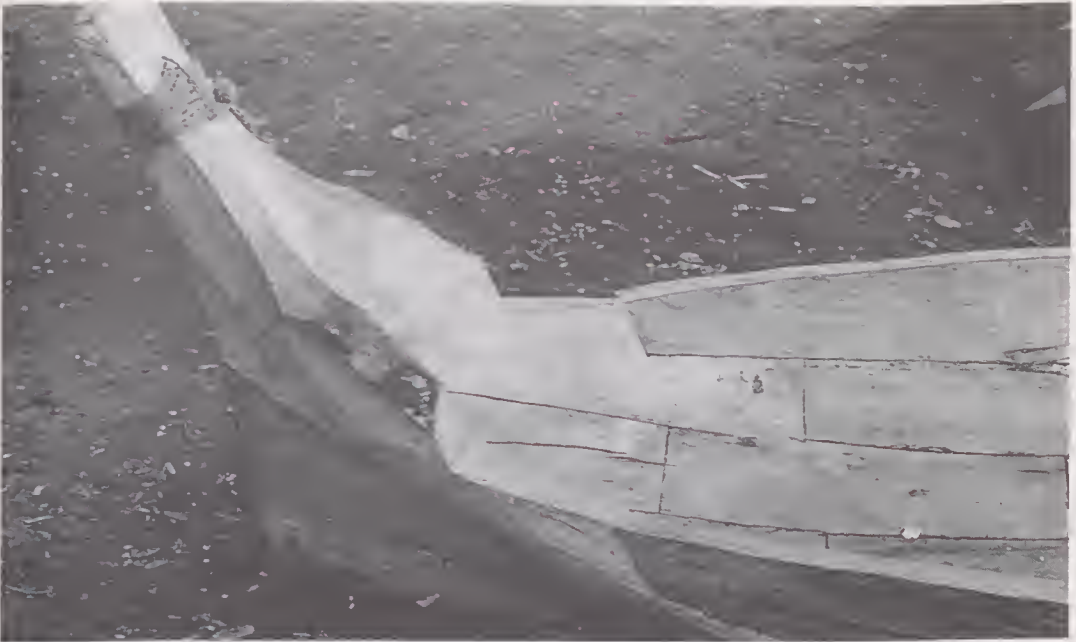


Fig. 5. The bow of a *sapa* under construction showing the roughly shaped *to'bo*.

dugout base was formerly more common but a true keel is now preferred because it can be fashioned from a hard durable timber whereas the dugout would be fashioned from a lighter timber, more easily worked but not so durable. The best timber available locally is called *kayu bafu* or *bapo* (*Vitex* sp., probably *pubescens*). A dugout would usually be *kayu waru* (*Hibiscus tiliaceus*) which is moderately durable if sufficiently mature but it has soft, rot-prone sap wood.

A keel or a dugout base is called *una*, the same name is used for the dugout base of the *kova navi*. Before any planks are fitted to the *una* of a *sapa* a small hole is drilled into one side of the *una* and a little gold is placed in the hole to ensure good fortune. The hole is considered to be the vessel's navel.

The planking which is edge-dowelled together can be made from a variety of timbers and frequently there is a variety of timbers used on one *sapa*. The best *sapa* are built entirely of *kayu bafu* although this makes them rather heavy. *Kayu waru* is often used and *kayu kajuwai* (*Callophyllum inophyllum*) is a good timber which is locally available and not as heavy or as difficult to work as *kayu bafu*. The planks at the midsection are called *fii* as on the *kova navi* but the plank pattern is more complicated (Fig. 3). Extending each *fii* to-

wards the bow and the stern are planks called *serepa*, and forming the ends of the lower straits are planks called *save*.

The upper straits do not have *save* and do not reach the bow or stern: they run out on large pieces called *to'bo* which form each side of the bow and stern. The name *to'bo* is the same as for the bow and stern pieces of the *kova navi* but the *to'bo* of the planked *sapa* are larger and much more complex in shape. They are stepped to take the ends of at least three straits and they form the distinctive shapes of the bows and stern with projecting prows and stern finials. The two *to'bo* that form each end of the hull are pinned together with a small number (two or three usually) of treenails made of a remarkably strong timber known as *kayu usu*. Crawford (1856:138) says that *usu* is *sapan* (*Caesalpinia sappan*) but local boat builders at Ende in 1989 stated that *usu* is different from, and stronger than *sapan*. Since *usu* can also mean treenail in *bahasa* Ende perhaps the name could be applied to any timber suitable for making treenails, for instance *Mimusop elengi*, *Dichrostachys cinerea* or *Sindora supa*. One of the treenails that fastens together the *to'bo* is positioned so that its middle portion is exposed where it passes between the converging port and starboard *to'bo*. Short stroops are spliced on to these



Fig. 6. The plank shell of a *sapa* nearly complete; the planks have been reduced in thickness and smoothed.

treenails to be used for carrying or dragging the *sapa* up and down the beach (Fig. 4). One might expect the treenail to snap under such load but apparently it never does. A similarly positioned treenail is usually found in the bow

and stern of built up dugout canoes in the Sulu Sea and South Sulawesi area.

The planking of a *sapa* is finished with a narrow sheer strake called *mimi* which terminates either with a step or runs out smoothly on

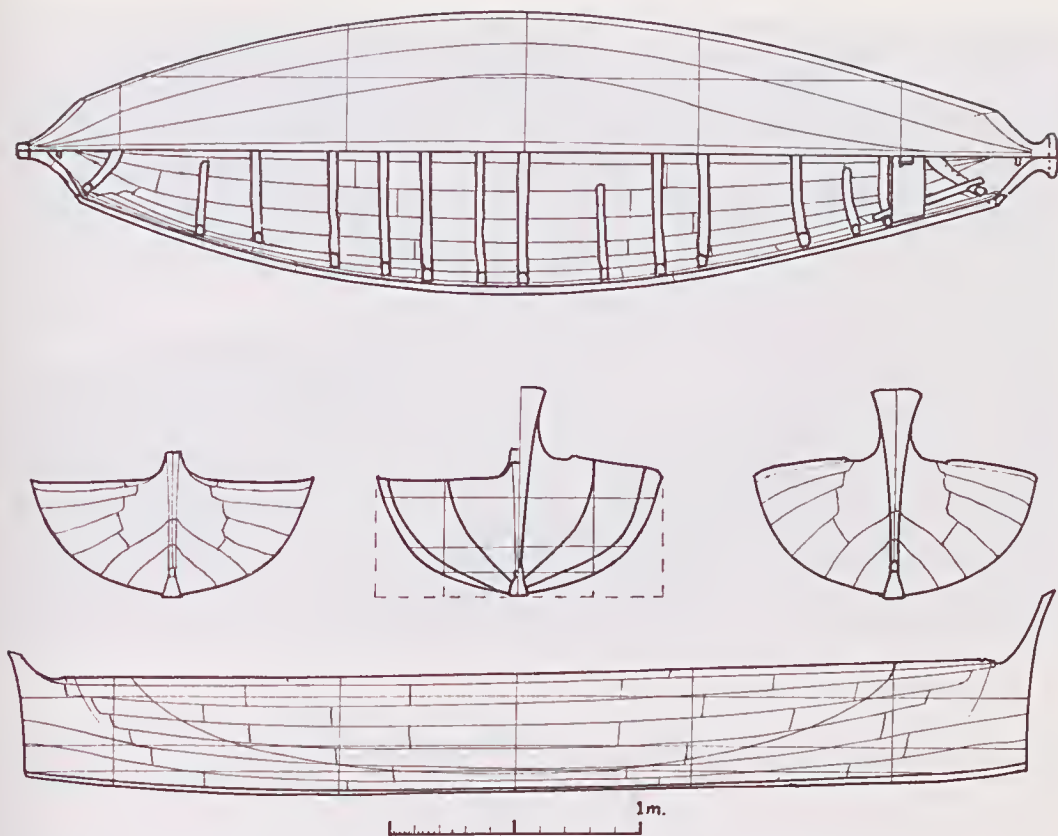


Fig. 7. Lines, plank pattern and rib placement of a small sapa from Kelurahan Ruku Lima.

top of the *to'bo*. The plank shell is assembled with the planks thick and rather rough hewn but the seams are carefully worked and tight (Fig. 5). Fibre scraped from the ribs of the *enau* palm frond (*Arenga saccharifera*) is used as luting (*du'du*) placed in the seams during assembly. When the plank shell is complete it is carefully smoothed and reduced in thickness (Fig. 6). The best *sapa* which are built of *kayu bafu* are given a fine polished finish to the plank shell both inside and outside before the frames are fitted.

Usually the first frames fitted are the forked timbers which fit into the bow and stern and function rather like bow and stern aprons. They are called *eko ika*, the name is equivalent to *ekor ikan* in *bahasa Indonesia*, meaning fish tail. The *eko ika* are raked into the bow and stern and in some cases the bottom end of the forward *eko ika* curves aft along the top of the keel to form the mast step.

Rib patterns vary: at Ende town the most common pattern is full frames alternated with half frames. Further west around the bay there are well built *sapa* with all frames made as full

frames and very long scarphs joining the timbers which compose the frames. In many cases a more-or-less arbitrary or random arrangement of floors, full frames with floors and half frames is determined by the availability of suitably shaped timbers.

The three styles of *sapa* shown in Figure 2 are each favoured in certain villages. In the villages on the south side of Ende town the *sope* style is popular, while on Pulau Ende the *juko* is more popular. The *sapa sangge* decorated with the *sangge* motif seems to have entirely disappeared but there are *sapa* with a curved forefoot and high prow and a matching stern profile which some people call *sapa sangge*, these are mainly at *Kampung Keraro* on the western side of Ende town. Both at *Kampung Keraro* and at *Ipih Bay* to the east it was said that this type, derived from or related to the *sapa sangge*, was the oldest type.

The smallest *sapa* of any type will have only one straik below the *to'bo*. That straik will terminate at the bow and the stern with the planks called *save*. Such a boat can be called *sapa save satn* ("one *save* boat"). Larger



Fig. 8. A new *sope* styled *sapa* at Ruku Lima.

sapa are *save dua* (two *save*) *save tiga* (three *save*) etc. There are always at least three straits which terminate on the *to'bo* and a sheer strait (*mimi*), so the minimum number of straits is five.

The plank pattern and lines of a small *sope* styled *sapa save dua* are shown in Figure 7. This *sapa* from *kelurahan* Ruku Lima at the southern end of Ende town, is typical of the small *sapa* built with a mast step but intended mainly to be paddled. There is little rocker to the keel, little freeboard and flat sheer. The midsection shows a sleek bilge turning gradually from the keel to the rail. Many *sapa* of only slightly greater size have relatively greater freeboard, more rocker of the keel and a slightly firmer turn of the bilge; they are designed to sail well and go further out to sea (Fig. 8). The length beam ratio of 4:1 is typical for small *sapa* whether or not they are designed to sail well. They have to be handled with skill and agility to avoid capsizing in gusty conditions. Larger *sapa* have relatively greater beam which confers greater stability. Figures 9 and 10 show the lines, some construction detail and sail plan of a larger *sapa* of the *juko* type from *kampung* Raporendu, about 20 km west of Ende. A *sapa* of this size is expected to sail well and would only be paddled when setting nets or in a calm. The midsection shows moderate deadrise with a little hollow, the turn

of the bilge is firmer and the topsides more vertical than on the smaller craft. The single spritsail has a high peak and considerable area. In heavy conditions the sprit would be taken down and the peak brought down to the taek to reduce sail area. All *sapa* carry a single sprit sail.

A boat of this size is not always considered to be a *sapa*. A *sope* style boat of this size could be called a *sapa* or a *sope bajo* at Ende (Fig. 11). This name reflects the belief that the *sope* style was introduced by Bajo people (Bajau or "Sea Gipsy") which might be true but curiously the *Bajo* people at Labuan Bajo, at the western end of Flores now call the *sope* style *sope Ende*.

The coaming in the bow and mast partner structure shown in Figure 8 are found on all *sope* and *juko* of this size and larger. The *to'bo* is a relatively small part of the whole structure. In the case of the *juko* illustrated, the three *save* also function rather like *to'bo* because there are two straits running into each *save*.

Only one quarter-mounted rudder is carried on a *sapa* and it is only effective when carried on the lee side so it must be shifted over the stern when the vessel changes tack. The rudder shown in Figure 9 is strongly raked and curved aft, this is typical for a *sapa*. The rudder mounting structure is a type found in South Sulawesi, mainly but not exclusively on

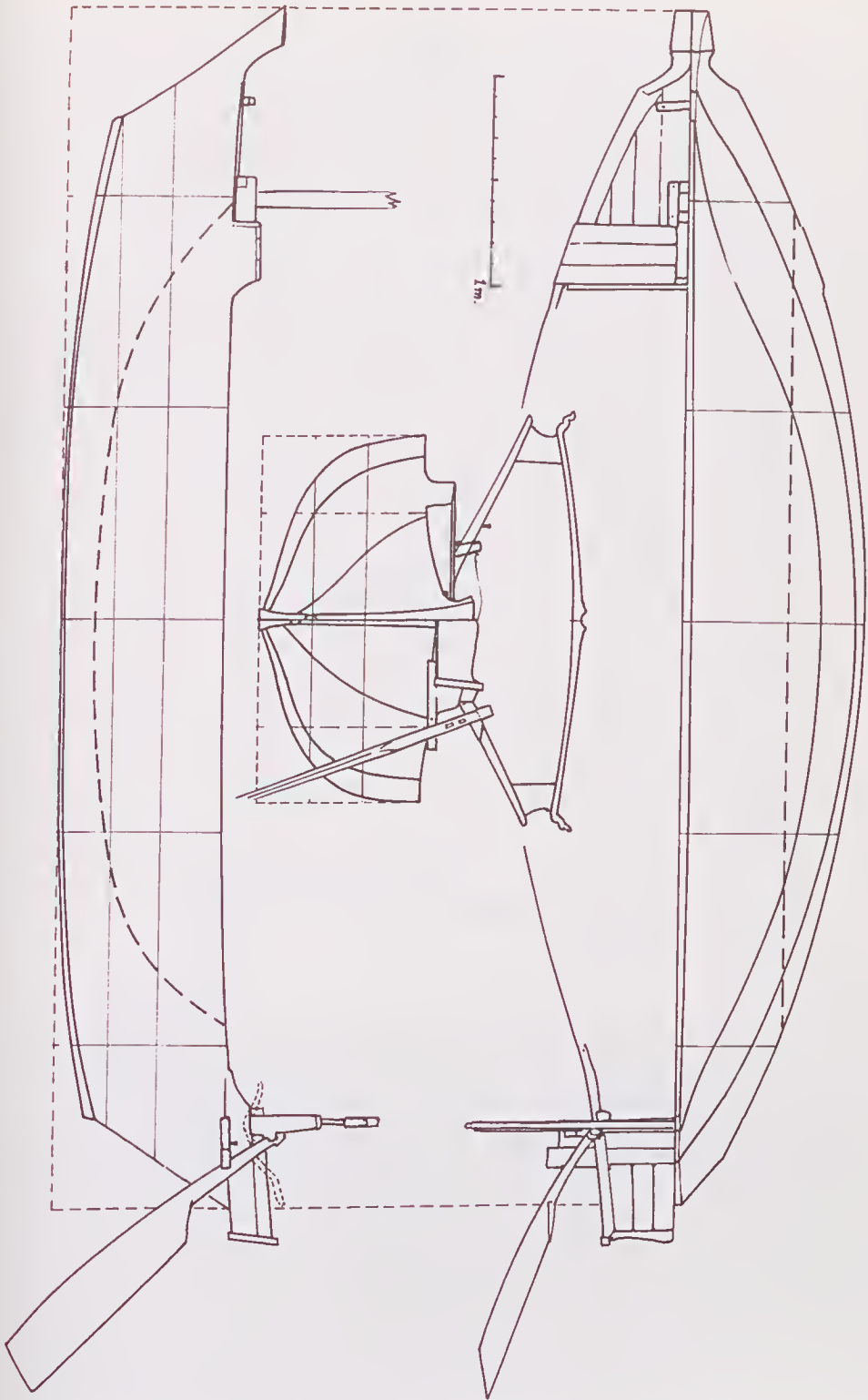


Fig. 9. Lines of a larger *juko* style *sapa* from *Kampung Raporendu*.

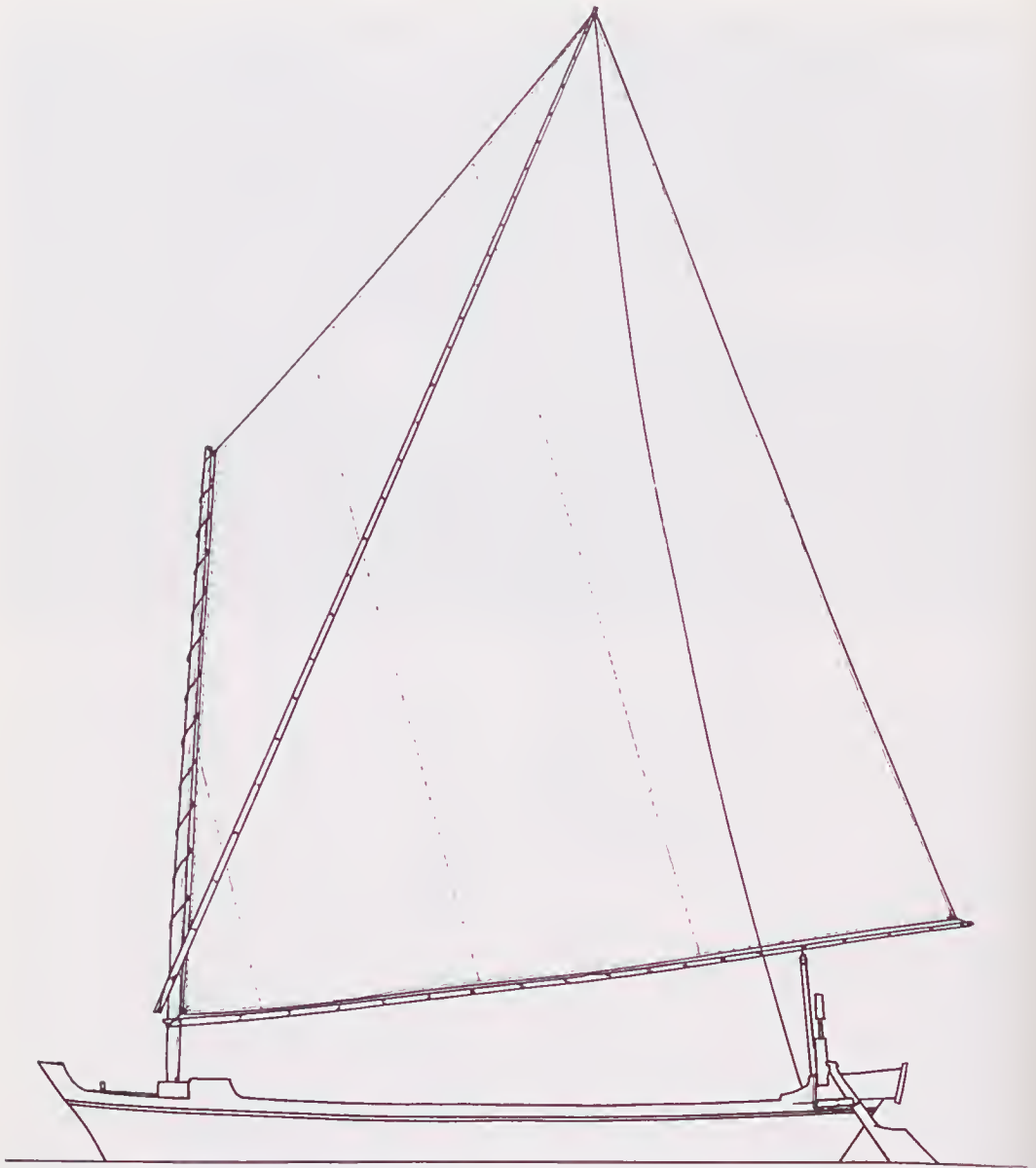


Fig. 10. Sail plan of the *sapa juko* from Raporendu.

Mandar and Bajo canoes. The strong rake and curve aft of the *sapa's* rudder would be unusual in South Sulawesi.

Sapa with their large spritsails and easy lines sail well, especially if they are not too heavily built. Some are rather heavily constructed but others are carefully finished with adze until the plank shell is reduced to less than 20mm thickness in the topsides.

Fishing techniques. *Sapa* are used mainly for fishing. A number of techniques are used. At night kerosene pressure lanterns are used to attract fish and squid for hand netting.

Purse seine nets are set from larger *sapa*. Hand line fishing is practiced at certain times of the year. Fish and crayfish are caught in basket traps. Rays, sailfish and sharks are sometimes taken with harpoons.

Many *sapa* are equipped for fishing in an apparently unique system. The equipment called *bando* consists of a float made from a segment of very large bamboo with a long fishing line attached, usually about 200 metres of 200 kilogram line with one or two large (No. 5) hooks on wire trace. The hooks are baited with small fish. A single unpainted

bando can be seen in the stern of the *sapa* in Figure 8.

A *sapa* will usually set about 25 to 30 *bando*. Each *sapa* has its *bando* painted with a distinguishing colour scheme and pattern: usually the *sapa* has a similar colour scheme. If the *bando* is taken by a fish it may be towed a considerable distance. Any fisherman who spots a *bando* with a fish on the line will retrieve it and land the fish. The fisherman will know from the colour scheme of the *bando* who owns it so he can return it with the fish: the fisherman who lands the fish and returns it is entitled to a quarter of the fish or its cash value. Apparently the system works well because everyone involved is scrupulous in observing the mutual responsibilities.

LARGER STEMLESS VESSELS FROM ENDE BAY

The larger cargo-carrying stemless boats are mainly from Pulau Ende and the others are from the mainland coast opposite the northern end of Pulau Ende. They are built in the *sope* and *juko* styles and are called *sope* or *juko* according to their style. Their hulls are fully enclosed by decks and cabins and they carry a tall gunter cat rig instead of the spritsail cat rig of the *sapa* and the intermediate sized *sope bajo*. They are equipped with two rudders, one carried on each quarter mounted on parallel rudder mounting beams (*sangkalang*) in the same manner as on larger traditional Makas-

sarese and Buginese vessels of South Sulawesi.

There are quite distinct differences between the midsection and hull form of a typical large *sope* and a typical large *juko*. Generally the large *sope* have more moulded depth, less beam, a firmer turn of the bilge and nearly vertical topsides (Fig. 12), while the large *juko* have sleek bilges and very flared topsides giving great beam at the level of the rail (Fig. 13). The largest *juko* can carry about 7000-8000 kg (7-8 tonnes) while the largest *sope* were built to carry about 5000 kg (5 tonnes), but in February 1989 there were said to be none of this size still in use: large *juko* were always much more common.

The coaming seen on the foredeck of large *sapa* is built into the cabin of the *sope* and *juko*. Cargo carrying *juko* and *sope* are most commonly employed carrying salt and rice from Bima, Sumbawa to Ende and other places on the south coast of Flores. They are generally acknowledged as fast and weatherly but they have the disadvantage that they will not come about or fall off on a new tack without at least one crew member working an oar: some traditional western cat rigged boats had the same problem.

Virtually all of the large *juko* and *sope* at Ende in February 1989 had auxiliary motors; most had only small auxiliaries and retained their gunter rig intact or only very slightly cut down. Some had their decorative mast finial with tufts of *ijok* palm fibre cut off flat to



Fig. 11. *Sope bajo* with masts unstepped.



Fig. 12. The stern of a large *sopé* showing a typical midsection.



Fig. 13. Large *juko* with a shallow, beamy midsection.

indicate that they were auxiliaries but the sail area was apparently unaltered.

STEMLESS DESIGNS IN OTHER PARTS OF INDONESIA

The *sopé* and other stemless designs were formerly more common and widely distrib-

uted in Indonesia. Large *sopé*, often with *tanja* rig (tilted rectangular rig), could be found in many places in eastern Indonesia until the 1970's. A fine *sopé* of this type was drawn in East Lombok in 1904 by W.O.J. Neiuwenkamp and it appears reproduced in Horridge (1985:61). Another stemless *sopé* seen dere-

liet near Pare Pare, Sulawesi in 1979 is presented in Horridge (1985:57).

A few *lete* (Indonesian lateen) rigged *sope* still exist in South Roti (Fig. 14) along with a larger number of similarly rigged open boats which have similar hull form but have a stem.

The Rotinese *sope* in Figure 14 has a stem fitted externally above the first *save*. It has a coaming on the foredeck like an Ende *sope* but the lines are much heavier. During the 1970's there were a few small *lete* rigged *sope* with finer lines at Oe laba, a community composed



Fig. 14. A *sope* from Roti; a stem has been added but it does not reach the keel.



Fig. 15. A small *sope* type boat with a light stem at Namu Sain near Kupang, Timor.

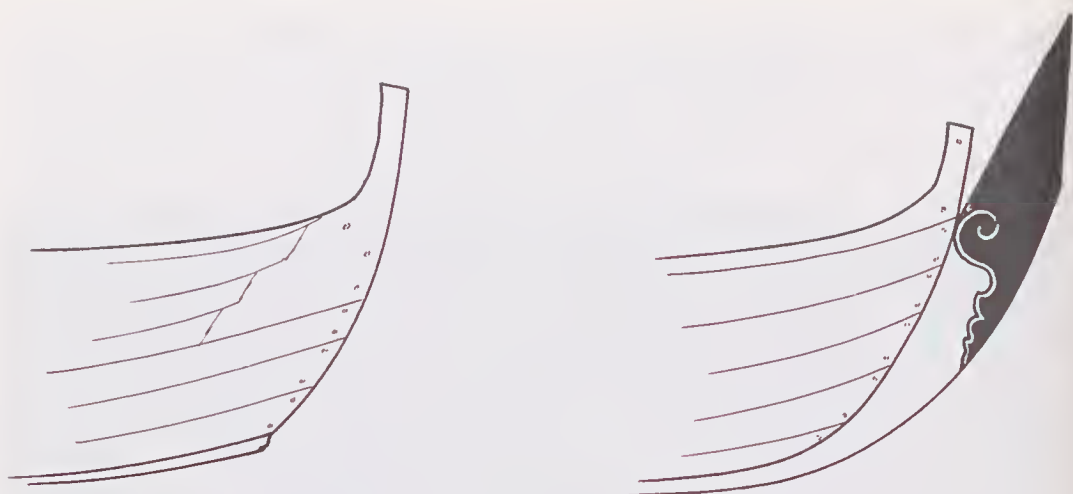


Fig. 16. The bow of a *sapa* compared with the bow of a *perahu lete* which has a large stem added.

mainly of Butonese and Bajo on Roti. Virtually identical small *lete* rigged *sope* could be found in the Tukang Besi islands, southeast of Buton especially at the Bajo community Pantai Mola on Wangi Wangi. These attractive small craft still exist in both places but they are now built or rebuilt with a stem and stern post fitted (Fig. 15). The stem and stern post are usually light and have little structural function because they are fitted on to the butt ends of the planks. Inspection reveals that they are built with a stem simply butted on to the end of the planking and often bolted to an apron after the plank shell is completed. In the case of the *sope* type boats the stem seems to have been adopted as a new means of producing the typical *sope* prow profile in a way which is easier and uses less timber than carving the prow as part of the *to'bo*.

The *juko* and *sangge* or *sapa* style of stemless planked boats are found only at Ende but the features of these styles can be found on the bows and sterns of dugout canoes throughout much of Indonesia along with the *sope* style. On Roti for instance, all three styles exist: a *juko*-style dugout is called *jurung jurung*, a *sope* style dugout is called *jukung* and the rounded *sapa* style is simply called *sampan* which is a general name for small water craft.

The rounded profile is relatively uncommon at Ende and it is not much favoured by Buginese, Makassarese or Butonese maritime people of Sulawesi but it is the distinctive style of the sophisticated built up canoes of the

Mandar people which are called *sande* and *pangkur* (Horridge 1985:pls 7,8,9). With a tall stem added it is also the style of the large planked *perahu lete lete* (Fig. 16) from the islands east of Madura which have mixed Mandar and Madurese populations.

It is possible that the curved profile was once more common. A drawing executed in 1839 by L. Le Breton of Macassan trepangers at Raffles Bay in northern Australia (reproduced in Macknight 1976:pl. 10) shows the Macassans using small planked outriggerless boats of the *sapa sangge*-style. It should be noted however that Le Breton was not always a meticulous observer of native craft.

In West Java, around Indramayu there exist stemless planked boats called *jegongan* which are styled much like stemless *sope* but have a different structure with only four broad straits (Burningham 1989). The *jegongan* might have developed independently of the stemless *sope* type or it could be another remnant of a once predominant style and tradition of Indonesian boat building.

ACKNOWLEDGMENTS

My thanks to the people of Ende Bay who were generous, patient and enthusiastic in giving me the data for this paper especially the men of Ruku Lima and Raporendu who made the measuring of their *sapa* so easy and pleasant a task. Thanks to Adrian Horridge who gave me a copy of his and Chris Snock's translation of C. Nootboom's work on boats

at Ende. Thanks to Dr Colin Jack-Hinton, the Director of the Museum and Art Galleries of the Northern Territory, who encouraged my field work at Ende. And thanks to Chris Haigh and Lorna Watt who have typed several drafts of this paper.

REFERENCES

- Bellwood, P. 1985. *Prehistory of the Indo-Malaysian Archipelago*. Academic Press : Sydney.
- Burningham, N. 1989a. Four double-ended Perahu Lambo. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* 6(1):179-194.
- Burningham, N. 1989b. The Structure of Javanese Perahus. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* 6(1):195-220.
- Crawford, J. 1856. *A Descriptive Dictionary of the Indian Islands and Adjacent Countries*: Bradbury & Evans: London.
- Haddon, A.C. and Hornell J. 1938. *Canoes of Oceania, Vol.3. Definition of Terms, General Survey, and Conclusions*. Bernice P. Bishop Musueum: Honolulu.
- Hornell, J. 1920. The outrigger Canoes of Indonesia. *Madras Fisheries Bulletin*. 12:43-114.
- Hornell, J. 1936. *Canoes of Oceania, Vol 1 the Canoes of Polynesia, Fiji, and Micronesia*. Bernice P. Bishop Muscum: Honolulu.
- Horridge, A. 1985. *The Prahu Traditional Sailing Boat of Indonesia*. 2nd edition. Oxford U.P: Singapore.
- Horridge, A. 1986. *Sailing Craft of Indonesia*. Oxford U.P.: Kuala Lumpur.
- Horridge, A. and Snock, C. Unpublished. *Boats at Ende by C. Nootboom, Translated and Summarised with Notes*. (Pcsonal communication to the author).
- Lebar, F.M. 1972. *Ethnic Groups of Insular Southeast Asia, Vol. 1*. Human Relation Area Files Press: New Haven.
- MacKnight, C.C. 1976. *The Voyage to Marege*. Melbourne University Press: Carlton.
- Nootboom, C. 1936. Vaartuigen van Ende. *Tijdschrift Voor Indische Taal-Land-en Volkenkunde* 76:97-126.
- Van kampen, P.N. 1909. *De Hulpmiddelen Der Zeevisscherij, op Java en Madoera in gebruik*. G. Kolff & Co.: Batavia.

Accepted 17 November 1989